Trilinear Convergent Magnetic Fields for Precision Electron Induction in a Mosaicized Voltage Cell

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Introduction

For long-term archival data storage, it would be useful to be able to store larger amounts of data at the expense of slower read and/or write times. Although a high density of data storage is possible using spintronic electron traps and that approach allows for fast read and write times, insofar as slower read and write speeds are allowable, there is a potential approach which could allow for a two-order-of-magnitude improvement in storage density. It requires both writing and reading information using mechanism never before explored by computational physicists.

Abstract

Data Writing Mechanism

As explained by this author in the publication of 17 February 2024, magnetic induction is predicated at the quantum level upon the convergence of magnetism converging from three directions. If a magnetic field line could be limited to the width of a single atom, three such lines could be made to converge at a specific point in any three-dimensional space (in a voltage cell, for example.)

A voltage cell beginning with zero charge could have, rather than a generic “voltage” applied to it by using a wire to convey electrons in varying total quantities could, instead, have electrons individually delivered without wires to specific grid coordinates in each voltage cell. This would allow relatively generic voltage cells to be used to support extremely specific placement of electrons which would remain, persistently, in a particular grid coordinate in a voltage cell.

This precision would open the door to adding as many as two additional electrons to the material, depending upon the chosen voltage cell material, in order to allow each atom to store information on a ternary basis.

Optically-Controlled Linear Magnetic Fields

In order for such a proposed writing mechanism to be feasible, a mechanism must be created which is rapidly switchable in terms of duration of impulse and direction, but also limited in terms of the directionality of the magnetic field generated. The width of the associated magneton beam can be no wider than the wider of a single atom.

Layered blocking materials may be used creatively in order to allow magnetism to pass through the material only in a particular area and

direction. The material would necessarily need to be of a type capable of permitting magnetism only when exposed to light. By projecting light toward the magnetism-gating material, magnetism is allowed to enter the voltage cell/grid. Note that we cannot allow light to enter the voltage cell as the photovoltaic effects associated with this would introduce electrons and corrupt the data. Magnetism would not corrupt the data; stored as a voltage potential; so long as care is taken not to allow the convergence of three magnetic fields in an area greater than any single atomic width.

Each voltage cell would be surrounded by a solid-state magnet projecting the north side of its field toward the center of the voltage cell.

Data Reading Mechanism

Each voltage cell would be surrounded by an electrical contact capable of serving as a voltage drain and electron counting/timing mechanism. Just as LiDAR utilizes time-of-flight analysis to determine how far away an object is, this mechanism would apply time-of-flight analysis in order to determine how far away an individual stored electron was at the instant that a voltage drain was applied to the cell by using precision timing in order to extrapolate this information. Instead of merely measuring the total amount of voltage drained or how quickly it was drained, it measures precisely how long it took each individual electron to exit the voltage cell and records the strike position of the electrons.

The mechanism would form a shell around the voltage cell and would be be able to relay information about the specific position of strike of an electron against the counter.

Conclusion

Thus, the overall mechanism would consist of: A voltage cell at the core, most likely of a cubic geometry, surrounded by, working from the outside, in: A solid-state magnetic layer, a magnetism-blocking layer, a light generating layer under the magnetism-blocking layer (pointing its light in the outward direction,) followed by the electrical contact voltage drain mechanism, which is switchable and drains voltage only upon demand. That layer should logically be limited to a single facet of the cube and that facet should be the one not used for the projection of magnetism. The precision insertion of a single electron into a voltage cell using convergent trilinear atomic-width magneton beams, as it would only require three (but no more) beams, would require the use of only three of the walls of the cube for this purpose, although the six total facets would open up the possibility of leveraging all six facets of each cube as beam sources for faster writing speeds.

The data storage density possible, when factoring the need for redundancy of storage (as every read attempt necessarily destroys data and any mistake in data handling would be catastrophic as well as factoring in the spacing between the cells and the wiring needed as well as the precision timers needed would, despite the requirements for redundancy, allow for storage densities of at least 16 trillions bits per cubic millimeter. 2.5-inch form factor

storage devices operating according to this principle would have a storage capacity of approximately 1 Exabyte per drive.

Entirely novel Random Access Memory systems capable of handing such large quantities of data (such as the Perpetual Transit RAM proposed by this author in 2024) may be needed in order to support such advanced data storage systems.